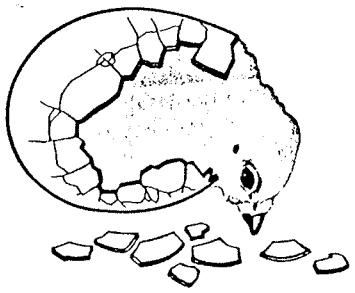

Dander

with your free and frothy, multi-authored if monochromatic international supplement

Newsletter of the Australian Veterinary Poultry Association October 1989 Number 37

The Australian Veterinary Poultry Association is a Special Interest Group of the Australian Veterinary Association. Membership is available to individuals and groups working in or showing an interest in any veterinary aspect of poultry. The annual fee is $30 [groups $80].
Enquiries to Secretary/Treasurer, Dr Ian Roth, Central Veterinary Laboratory, Roy Watts Road, Glenfield NSW 2167. Tel. [02] 605 1511 Fax [02] 605 2282

Send items for this newsletter to Trevor Faragher, CSIRO Animal Health, Private Bag 1, Parkville 3052. Tel. [03] 342 9768 Fax [03] 347 4042

The Xth International Congress of the World Veterinary Poultry Association in 1993 goes to Sydney

President Clive Jackson describes the machinations of the Wizards of Oz who were behind the winning bid.

With the aid of 500 stuffed koala bears [non-piddling variety], a video showing kangaroos hopping, kookaburras laughing, aborigineees corroboreeing and Qantas jets flying, your Bid Committee braved the corridors of the WVPA Bureau knowing that the northern hemisphere gerrymander was organised in such a way that even a Queenslander premier would be proud.

However, little did the Bureau know of the tactical plan that was being hatched on the 18th floor of the Hyde Park Hilton among the lush pile carpets, running maids and Moet champagne [Bagust variety]. Already the 500 koalas had been cleared through customs in Amsterdam and London. Elsewhere in the world, AVPA lobbyists [Sinkovic, Grimes, Whithear, Chubb and others assuming false names] were convincing Bureau members of the merits of congressing down-under. Our Convener had armed himself with petitions representing more than two billion peoples [actually letters from the equivalent of the AVPA's of China, India, Indonesia and Japan] capable of eating all the chickens in the world at a single sitting. The Hyde Park meeting combined the wisdom of the representatives of QANTAS [Michael Bishop], Hilton International [Julius Brockman], the Tourism Commission of NSW [Ian Milligan] together with the AVPA Bid Committee Convener [Trevor Bagust] and El Presidente and His First Lady [Patricia]. A strategy was developed to overcome the northern hemisphere gerrymander. This must be kept confidential as it could be used against us, but may become clearer below.

Scene 1. At first light on August 13, 500 koalas were removed from their plastic wrappers and located at strategic points throughout Brighton, particularly on the lapels of Bureau members. Some were even observed on the lapels of Hungarian delegates who were making a bid for the Congress. All satchels bore bears. Everyone was exposed; no one could escape from being 'beared'. Even the Americans thought we were brash as the tag on the koalas read: 'G'day, see you in Sydney in 1993'.

Scene 2. Last minute strategy was discussed and votes counted over a heavy lunch and more Moet. At 3.30 pm on August 13, our team fronted the Bureau. In a performance worthy of several replays, the Bureau members were subjected to 20 minutes of a well-orchestrated recital of the reasons for holding the 1993 Congress in Sydney. The presentation consisted of an introduction by our Convener, a seven minute video, a presentation of our 38 page bid document by your President with subliminal lighting by his First Lady who was accidentally leaning on the light switches. In anticipation of questions of our budget, we first defended our registration fee of $800 but, sensing smiles on the faces of our opponents, our convener countered with a fire sale discount to $US

..... continued on page 5

SUSTAINING MEMBERS OF THE AVPA

Sustaining Members contribute funds which help defray running costs of the AVPA. Support is given in annual units of $80. The Association thanks these firms for their active interest and support.

Five units

Arthur Webster Pty. Ltd.

Four units

Australian Poultry Ltd.
Baiada Pty. Ltd.
Cyanamid [Australia] Pty. Ltd.
Inghams Enterprises Pty. Ltd.

Two units

A.A. Tegel Pty. Ltd.
Barrters Enterprises
Golden Cockerel Pty. Ltd.
Goodman Fielder Industries Ltd.

One unit

E. R. Squibb and Sons Pty. Ltd.
Pfizer Agricare Pty. Ltd.
Roche Products Pty. Ltd.
Upjohn [Australia] Pty. Ltd.

Paul Gilchrist's Fistful

The Welfare Debate

Some light is shed on the issue of bird welfare in the modern poultry industry in the Gordon Memorial Lecture titled "The Genetic-Behaviour Interface and Well-Being in Poultry" given by Paul B Siegel and published in British Poultry Science 1989 **30**: 3-13.

This is a review of gene-environment interaction and manipulation followed by an informed view of future trends.

An important opinion in the increasingly opinionated debate.

Hepatic coccidosis in a magpie

Rod Reece reported in Avian Pathology 1989 **18**: 357-362, a case of hepatic coccidiosis in a magpie in Victoria. It is a new species and he suggested that it be called *Eimeria grallinda.*

Those who see wild birds should check bile ducts for coccidia. There must be more firsts out there.

Rod, now at Houghton, is still publishing the results of the

Zeolite Magic

This mineral occurs in a number of forms, some of which appear to enhance egg production. A recent report by Olver MD 1989 British Poultry Science **30**: 115-121, records the effect of clinoptilolite, a zeolite of South African source, on three strains of laying hens. The dose used was 50 g/kg. No costings were included.

Significant improvement was recorded in eggs laid per hen, shell thickness, efficiency of feed utilisation, mortality and the moisture content of droppings. Strain differences were also significant, with one strain laying 12 more eggs than controls of the same strain. Another strain laid 6 eggs more and the third laid one egg less.

Perhaps there is a similar magic in an extract of an Austrian Moor which I am currently testing for effect on broiler growth.

Competetive Exclusion - The Latest

Certain bacteria and the caecal contents of adult chickens will prevent subsequent colonisation of the caecum by *Salmonella typhimurium.* This competetive exclusion has been recognised since 1973. A Japanese group [Fukata *et alia* 1989 Poultry science **68**: 311-314] has reported on single organism infection effects on *S typhimurium* with gnotobiotic chicks. The organisms tested were:

Bifidobacterium thermophilum
Bacteriodes vulgatus
Lactobacillus acidophilus
Clostridium perfringen and
Escherischia coli.

Only *E. coli* showed competetive exclusion. A standard strain of *E. coli*, 0-150 antigen, was used.

If this effect is confirmed by others, it leads to the possibility of a more reasonable method of *S. typhimurium* control than the previously envisaged use of fussy anaerobes.

Emerging Diseases

1. Cryptosporidia should be included in the differential diagnosis of avian respiratory disease. A group from Georgia, USA [Goodwin *et alia* 1988 Poultry Science **67**: 1684-1693] has published an excellent review of methods for diagnosing Cryptosporidiosis in respiratory disease of chickens.

The organism is about and is hard to detect so we should keep it in mind. Histopathology is the diagnositc method and special methods of staining smears of tissue are recommended. Who can identify the organism in this country?

2. Lung nodules were reported by Maxwell *et alia* 1989 Avian Pathology **18**: 113-124, as ectopic, fibrous, cartilaginous and osseous lesions that can be induced in young broilers held under a system of inadequate ventilation.

This should encourage diagnosticians to look for this lesion as a possible indicator of poor husbandry. Just don't go to court until all the evidence is in.

Another AEV ELISA

Following the work of Smart and Grix at the VRI, Parkville, the Newcastle team of Shrafen, Tannock & Roberts 1989 Research in Veterinary Science **46**: 95-99, have come up with an alternative ELISA for the detection of antibody to avian encephalomyelitis virus.

This procedure differs in that it has a negative antigen subtraction step to allow for the variable adhesiveness of chicken sera to plastic surfaces.

The test is described as economical, rapid, sensitive, specific and amenable to large-scale testing of sera on a single day, while its development to ascertain the immune status of flocks to AE virus should allow appropriate vaccination strategies to be implemented and assist in the rapid diagnsosi of outvbreaks of the disease.

Diagnosis of AE

Measurement by an ELISA of antibodies to avian encephalomyelitis virus was reported by Shafren, Tannock and Morrow 1989 Australian Veterinary Journal **66**: 224-225. They collected sera from a laying flock of 9000 hens during a sharp decline in egg production and, again, 10 days after the maximum egg drop when production had returned to 90 %.

Rapid spread of AE virus was shown by seroconversion. Clinical signs of infection were apparent in the flock, but were not described.

Lesions in chickens with 'flu virus

Barr *et alia* 1986 Australian Veterinary Journal **63**: 195, reported an outbreak of avian influenza in a multi-age chicken farm near Bendigo, Victoria. Forman *et alia* 1986 *ibid* **63**: 294, showed that the H7N7 influenza virus isolated was highly pathogenic to chicken and turkeys but not to ducks.

PT Hooper 1989 *ibid* **66**: 115-156, has shown that the intra-nasal inoculation of chickens aged 6 and 12 weeks with this virus produced a characteristic pattern of disease affecting the bursa of Fabricus, pancreas and brain.

NDV survey in N Qld

The most likely routes by which virulent NDV could be introduced into Australia are from illegal introduction of infected birds, as happened in 1978, and by migratory birds. Although migratory birds fly into northern Australia across a broad front, the greatest variety enter the country across Torres Strait, which is the shortest gap between land masses.

To determine whether birds entering northern Queensland were carrying, or had been infected previously with, NDV, ST Garnett and M Flanagan 1989 Australian Veterinary Journal **66**: 129-134, bled/swabbed 1235 birds from 130 species in far northern Queensland in two sessions 1984/5 and 1986/7. The samples were tested for haemagglutinating virus and/orNDV antibody. None gave a positive response.

On the available evidence, the authors considered that pittas and rainforest pigeons were the species most likely to bring virulent NDV into Australia, followed by gulls and night herons which move between dense seabird breeding colonies and other avian communities. Both can be monitored easily by strategic sampling among migratory pathways or at breeding islands. Wild parrots, waterfowl and migratory waters appear to present a minimal threat.

The need for SPF flocks

Mycoplasma contamination of cell cultures is still a serious problem in bioassays and biological products in China.

From Beijing, Hu Zong-Han and Wang Tai-Jiang reported to the Sixth International Congress of the IOM, 1986, Birmingham, Alabama, 13 isolates of *Mycoplasma gallisepticum* from measles vaccine. The source of the contamination was the chicken embryos used in the manufacture of the vaccine.

Taking on the Egg Board

In his home state of Victoria, Professor Fels [Professor of Business Administration at Monash University] is probably best known for his investigations of the Victorian Egg Board, beginning in 1985, which actually forced egg producers to drop their prices - an extraordinary move in inflationary times.

As Victoria's first Prices Commissioner, appointed by Premier John Cain, Professor Fels delved into the complicated and convoluted methods of producing and marketing eggs in Victoria.

He found an inequitable system of quotas and regulations which ultimately kept the price of eggs unreasonably high. At the heart of the problem was the producer-dominated Victorian Egg Board which had a monopoly over egg production and was a unique body in that it had full control of the production, marketing and prices of all eggs sold in the state.

The Egg Board has been in existence for over 50 years and in its early days convinced the state government to set minimum prices for eggs. The guarantee of good profits lead to an overproduction of eggs and, in 1975, a quota system was established to control strictly the number of commercial egg-producing hens in Victoria. The only way a person could [and can] enter the egg producing industry was to buy documents officially allowing a hen to produce eggs for sale. These quota allowances are sold by producers getting out of the business or scaling down production and command as much as $18 for each bird.

Professor Fels found that this, tied with a 'disturbingly high' typical return of 39% per annum for egg producers, meant consumers were paying too much for eggs. Although each state has its own Egg Board and similar quota arrangements, Victorians were paying, for example, up to 30 cents more for their eggs than their northern neighbours in NSW [and two-thirds more than the US].

Professor Fels summarised his study by saying that consumers were paying at least 20 cents a dozen too much for eggs, and that prices should be cut immediately by 12 cents, with a likely further reduction to follow in a year's time.The Egg Board agreed to this first cut and since then egg prices have been lower in Victoria than in NSW. Also since then, there has been pressure from other areas to restructure the Egg Board. A Victorian Parliamentary Public Bodies Review Committee [PBRC] recommended in 1987 that the Egg Board be stripped of its pricing powers, but this has yet to be agreed to or implemented.

A subsequent report, completed by Professor Fels in March last year, recommended another cut in prices. But so far, the Egg Board has 'not been very enthusiatic' about implementing this second cut and, unless the PBRC recommendations are adopted, the Board is under no legal obligation to comply.

Handypersons

Trichinosis, according to that malevolent American Ambrose Bierce, was the pig's reply to pork chops. In his Devil's Dictionary, Bierce defined the hand as 'a singular instrument, worn at the end of the human arm, and commonly thrust into somebody's pocket'.

Since Bierce disappeared into Mexico in 1912, he is ineligible for a handout. Some who did not come away emptyhanded from the chicken meat and egg research councils this year were:

R Boyd, U Monash. Improvement of chicken disease resistance by cytokines. $74,,005 to December 1991.

KJ Fahey, CSIRO. Epidemiology and immunobiology of chicken anaemia agent and its involvement in outbreaks of adenovirus induced inclusion body hepatitis. $143,253 to June 1992.

J Ignjatovic, CSIRO. Avian infectious bronchitis: studies towards improved control measures. $128,178 to June 1992.

J Ignjatovic, CSIRO. Junior Research Fellowship for the previous project. $58,200 to June 1992.

B Sheldon, CSIRO. National poultry gene mapping project. $93,106 to June 1992.

G Tannock, U Newcastle. Studies with Big Liver and Spleen Disease. $36,089 to June 1990.

G Tannock, U Newcastle. Development of an ELISA for the sero-diagnosis of the putative chicken anaemia agent in Australian flocks. $15,132 to June 1990.

G Tannock, U Newcastle. Determination of immunogenic relationships between Australian strains of avian infectious bronchitis by an in vivo clearance test. $116,961 to June 1992.

A Brown, U Newcastle. Respiratory health of chicken farming. $28,094 to June 1990.

G Parkinson, DARA Victoria. Evaluation of vitamin D status of commercially reared broiler chickens. $108,247 to June 1992.

M Smith, DARA, Victoria. Fungal toxins in chicken feed: the development of rapid detection tests. $53,601 to June 1991.

J Barnett, DARA Victoria. Fear and its consequences on the behaviour and productivity of commercial broiler chickens. $16,786 to June 1991.

D Balnave, U Sydney. Hatchability of eggs from hens receiving saline drinking water. $4,700 to December 1989.

G Cross, U Sydney. Field studies on the virulence, immunogenicity and longevity of A20 and ND strains of ILT virus. $71,796 to June 1991.

P Blackall, DA Queensland. An evaluation of the cross-protection afforded by inactivated coryza vaccines. $10,000 to June 1990.

K Whithear, U Melbourne. Studies on the prevention and pathogenesis of egg transmission of *Mycoplasma gallisepticum* . $36,494 to June 1990.

ACMF. Seminar on Newcastle disease; September 1989. $6,000.

Second term for the research councils

Members appointed by the Minister for Primary Industries and Energy, Mr John Kerin, to the chicken meat and egg research councils until 31 December 1991 are:

Chicken Meat Research Council

Dr A Lascelles [chairman]
Mr R Belcher, Government member
Dr E Best, AA Tegel Pty Ltd
Dr J Craven, DARA Victoria
Dr KJ Fahey, CSIRO Parkville
Dr D Fraser, University of Sydney
Mr T Luckhurst, NSW Chicken Meat Growers Association
Dr R MacAlpine, Inghams Enterprises Pty Ltd
Dr R Ryan, Australian Poultry Pty Ltd

Egg Industry Research Council

Dr D Smith, chairman
Mr L Bell, Altona Hatchery Pty Ltd
Dr LL Callow, consultant
Mr R Hohl, Gold Coast Poultry Products Pty Ltd
Dr R Pym, University of Queensland
Mr W Schofield, Tamworth Egg Producers

Go thou and do likewise

Two recent controversies - over a claim by a Frenchman, Dr Jacques Benveniste, that water retains the molecular memory of substances even in infinitesimal dilutions, and an assertion by two scientists, an American and a Briton, that they had succeeded in achieving cold fusion - illustrate the dominant part that leading scientific journals play in disseminating the work of research scientists by confirming their discoveries or exposing their errors.

"If God tried to enter the CNRD [National Scientific Research Council], he'd flunk," quipped Hubert Curien, himself a scientist and now Minister of Research and Technology in the French Government. "He has performed an interesting experiment, but nobody has ever succeeded in replicating it. He has explained his work in a voluminous publication, but it wasn't even in English and he has published nothing since."

The witticism has the merit of clearly raising the question of evaluating and publishing scientific research which was brought up this year by several sensational controversies over subjects that ranged from the 'memory of water' to 'cold fusion'.

The researcher who believes he has made an interesting discovery in the secrecy of his laboratory must communicate it to fellow scientists the world over who will then try to reproduce the experiment. If the results are positive, they in turn will publish their conclusions and only then does the original researcher's 'proposition' become a discovery that may at some future date rate a Nobel prize or even another grant from Chicken Meat.

continued from page 1 .....
250 [may the balance of payments save us]. Still more tricks up our sleeves. Seated in the second row of the Bureau members was Professor Hu, representing the AVPA-sponsored Chinese Poultry Health Society and in the back row, looking like a Bureau member, was the wife of the representative of the Tourist Commission of NSW [did she have a ballot paper?]. Also, Trevor Bagust remained in the Bureau meeting to hear the Hungarian bid and to answer any question during the degate.

Scene 3. Tense AVPA Bid Committee members sitting in the bar swilling pints of English ale awaiting the verdict. Enter TJB with head down not gving anything away until he could contain himself no longer - the AVPA won by 11 votes to 9!!!

Final Scene. Midnight. A meeting of the AVPA executive in the convener's room. The Moet had run out and we had to settle for German bubbly. We weren't sure which strategy had worked.

Many people to thank. All those above who did a tremendous job, but behind the scenes were Margaret Reid, a PCO of note, Julie Casey of the Sydney Convention and Visitors Bureau, and Paul Gilchrist and Dinah Fry-Smith of Biological Technology Transfer P/L.

Presentations by Australians at WVPA Congress on August 14-17 were:

Dixon RJ Infection of duck embryos with duck hepatitis B virus.

Dixon RJ Influence of reticuloendotheliosis virus co-infection on duck hepatitis B virus viraemia.

Dixon RJ The effect of furazolidone on the production and hatchability of eggs from Japanese quail [Coturnix coturnix Japonica].

Tannock GA & Avidson Y Determining immunogenicity of infectious bronchitis strains: a model system .

Spradbrow P, Samuel J, Ibrahim AL & Cumming R Control of Newcastle disease in village chickens with an oral vaccine.

Morrow C & Whithear K Application of genome analysis of avian mycoplasmas to epidemiological investigations.

Jackson CAW The control of Marek's disease through the alternating use of apathogenic Marek's disease virus and herpesvirus of turkeys vaccines on successive generations of chickens.

Bagust TJ Poultry health and the Australian-China Poultry Projects 1986-1989.

Cumming RB Gizzard size and coccidiosis resistance.

Crerar SK & Cross GM Big liver and spleen disease in broiler breeder chickens.

Fahey KJ, Loudovarist T & Calneck BW A possible mechanism for genetic resistance to infectious laryngotracheitis in chickens.

Fahey KJ & York JJ The role of local antibody in the recovery of chickens from infection with infectious laryngotracheitis virus and in resistance to reinfection.

Fahey KJ, Macreadie I, Chapman TJ & Azad AA A recombinant subunit vaccine against infectious bursal disease.

Prowse S & Pallister J G Gamma-interferon release as a measure of T cell recognition of coccidial antigens in chickens.

Mysterious deaths of birds in Assam

An eight-year study by Indian zoologists has failed to establish why birds commit suicide year after year at the small village of Jatinga in the northeastern state of Assam.

Attracted by lights, birds converge on Jatinga at night and on landing become immobile, stop feeding and starve. They neither resist capture nor try to fly away.

The peak suicide season is on dark rainy nights when winds are strong and clouds are dense as the Indian monsoon tapers off in September and October. The place is always the same: a one-kilometer stretch between the railway station and the health centre. Knowing that birds are lured by lights, the villagers light up the sky with lamps on tall bamboo poles to attract more birds, which are then barbequed and eaten. As many as 500 birds die every night during the peak season. Some 36 species of birds have been identified among the dead, including migratory birds.

Meanwhile the state government of Assam has taken two steps to save the birds. Tall towers with powerful lights have been erected to divert the birds from the light sources of Jatinga, and bird-watching clubs have been formed to protect the dazed birds from the villagers.

The phenomenon, which has been occurring since 1905, may be related to observed changes in geomagnetic and electric fields that apparently affect the bird's sense of orientation.

The shape of things to come

A lesser Dander this quarter because of the inclusion of Aerosols. Regretably, this has meant that several excellent contributions have been held over until the next issue in January 1990. These contributions include:

* Clive Jackson will continue his moety reminiscences of summer in England, vintage 1989, with a review of the scientific content of the WVPA Congress.
* Jagoda Ignjatovic reports on the First International Symposim on Infectious Bronchitis.
* Ian Bell describes the preparation of the AVA policy on poultry welfare and its reception by the Senate Select Committee on Animal Welfare.
* and your contribution on life and times of things chook, either here or elsewhere, will be both welcomed and accommodated. Carn, 'ave a go! TF

International Breeding Company wants Veterinarians

BTT has been approached by an international poultry breeding company to find two experienced poultry veterinarians. The positions are located in Scotalnd but also involve significant travel, particularly for the veterinarian responsible for the health status of their world-wide joint ventures and grandparent operations.

The other position would involve control of the company's breeding programmes health status, health associated R & D genetic projects and their in-house diagnostics development.

Veterinarians who are interested in these positions should contact either Paul Gilchrist or Clive Jackson of BIOLOGICAL TECHNOLOGICAL TRANSFER P/L, telephone [02] 319 2229. All enquiries will remain strictly confidential.

The History of Poultry Bacteriology in Australia

Len Hart
262 Attunga Road
Yowie Bay 2228

Before World War 1, the poultry industry in Australia was fragmented. Few farms carried more than several hundred fowls, turkeys were run mainly as a sideline to wheat growing and a few specialist duck farms were adjacent to major cities. The forms of husbandry practised limited the spread of bacterial diseases and little professional help was available.

After the war, the government acquired land and established what were described as 'soldier settlements'. On five acre blocks, poultry farms were developed to carry about 1000-1200 laying hens. Thus for the first time there were large flocks of fowls with the birds in close proximity to one another. With the more intensive nature of poultry farming, incubators were developed and batches of hundreds of chickens were hatched at a time. These developments favoured the rapid spread of infectious diseases.

The first reports of bacterial diseases appeared in 1914 when spirochaetosis and wattle disease were diagnosed. *Borrelia gallinarum* [later known as *B anserina*] infection was diagnosed in NSW [Anon 1914]. In Victoria, Seddon [1914] reported wattle disease of fowls due to Pasteurella.

Hart developed an egg-grown vaccine to immunise fowls against infection with *B anserina* [Hart 1963]. It was shown that all Australian isolates were antigenically similar. Field trials of the vaccine by Henry [1950] demonstrated excellent protection and the vaccine became a commercial product in 1950. Gorrie [1950], who was working at the Veterinary Research Institute, Parkville, described an egg-grown vaccine prepared in a somewhat different way. This vaccine was also effective. Hart [1970] reported the successful freeze-drying of *B anserina.*

Seddon [1921] reported the presence in Victoria of bacilliary white diarrhoea, caused by Salmonella pullorum , and now known as pullorum disease. Seddon was to become the first Director of the Veterinary Research Station, Glenfield, and, later, the first Professor to be appointed to the Veterinary School at the University of Queensland. Seddon and Carne [1926] while working at Glenfield, reported the presence of pullorum disease in NSW. Carne was to become Professor of Veterinary Bacteriology and Pathology at The University of Sydney.

About this time, the establishment of State Government diagnostic laboratories in other States and the employment of government veterinary officers in the field to service the burgeoning poultry industry resulted in the recognition of various diseases.

Pullorum disease was rife when, in 1929, JK Hutchison joined Glenfield to specialise in poultry diseases. He commenced a pilot trial on two poultry farms. Eradication of the disease was to be attempted by a test and slaughter method. The test was a tube agglutination [two dilutions of serum] and successful eradication was achieved in 4-5 years. In the mid-1930s, Hart, who had replaced Hutchison at Glenfield, produced a stained pullorum antigen for use in a rapid whole blood agglutination test in the field. Hungerford [1941] reported the eradication of pullorum disease by means of this test. In 1949, a pullorum-tested flock scheme was started in NSW. Similar schemes were adopted in other States.

In the 1960s, a variant strain of *S pullorum* was shown to be causing some breakdown problems. Simmons [1966], in discussion of a paper by Keast *et alia* [1966], reported the recovery of 63 strains of *S pullorum* in Queensland. Of 34 that were tested, 16 were shown to be variant, 8 were standard and 10 were intermediate type.

This was a most important finding as the stained antigen then in use in the field contained mostly standard strain isolates, resulting in some infected fowls not reacting to the test. Steps were taken immediately to incorporate a balanced mixture of strains in the commercial antigen. By the 1970s, pullorum disease had been virtually eradicated from all commercial flocks throughout Australia.

Seddon and Edgar [1930] recorded the isolation of *Cl. botulinum* from soil samples throughout NSW. Edgar was to become Director-General of Agriculture, NSW. Pullar [1933,1934] working at the VRI Parkville, reported botulism in domestic ducks in 1933 and an enzootic outbreak of botulism in wild duck in 1934. Burnet [1934], later Sir Macfarlane Burnet FRS, OM, Nobel Laureate, published a paper demonstrating the widespread infection of the free-flying parrot populations with *Chlamydia psittaci.* In recent years, *C psittaci* has been reported in pigeons.

Mortality in turkeys caused by infection with *Aspergillus fumigatus* was described by Hart [1937] who also described serious field outbreaks of fowl cholera [Hart 1938].

Respiratory diseases had caused serious losses for many years. Both fowl pox and ILT viruses had been shown to be important. Although infectious coryza due to *Haemophilus paragallinarum* [originally *H gallinarum*] had undoubtedly been present for many years, it was not until 1946 that Hart [1946] grew the organism. Blackall and Reid [1982] characterised *H paragallinarum* and *H avium* [non-pathogenic] in isolates from around Australia. Reid [1982] described serotyping of Australian isolates and reported that 77% were type C, 14% were untypable and only 9% were type A. Aluminium hydroxide absorbed *H paragallinarum* vaccines against infectious coryza were shown to be effective by Blackall and Reid [1987]. Their results have led to the production of

commercial vaccines to prevent infectious coryza.

Hart [1940] had investigated sinusitis in turkeys and showed it to be infectious. He was not able to determine the cause which was subsequently shown to be *Mycoplasma gallisepticum* . Originally designated pleuro-pneumonia-like organisms [PPLO], it was thought to be the same organism that Nelson had, while working at the Rockefeller Institute in New York in 1932, designated cocco-bacilliform bodies and shown to cause a respiratory disease of slow onset and long duration. Cottew [1956] while working in Queensland, isolated a similar organism from cases of chronic respiratory disease in chickens. However Cottew did not identify his isolates as *M gallisepticum* and could not reproduce disease with material harvested from inoculated eggs. The first record in Australia of the isolation and characterisation of *M gallisepticum* from a fowl appears to be that of Rosenfeld [1971].

Cumming [1961], at the University of New England, Armidale NSW, reported that flocks on 16 of 17 farms in the Tamworth district of NSW had high percentages of positive reactors to a slide agglutination test using *M gallisepticum* antigen. Rob Cumming had migrated from South Africa where he had worked extensively with *M gallisepticum*. He reported the establishment of *M gallisepticum* -free flocks by isolated rearing [Cumming 1962]. In the same year, Hart, working at Abbot Laboratories demonstrated dipping hatching eggs in cold solution of erythromycin to control egg transmission. Whithear [1983] reviewed the status of *Mycoplasma spp* in the Australian poultry industry and described efforts to produce a strain of low virulence to use as a live vaccine. His work at the University of Melbourne approaches fruition.

Meanwhile, *M synoviae* infection had been identified in Australian flocks by positive reactions to the agglutination test by Cumming [1970] and Gilchrist [1972]. The organism was isolated by Gilchrist and Cottew [1974].

M meleagridis , an important pathogen of turkeys, was isolated by Grimes [1972] while working at the Animal Research Institute, Yeerongpilly, Queensland.

In the 1940s and 1950s, subcutanous infection of meat chickens with *Staphylococcus aureus* often caused problems; Fielder [1949] described field outbreaks in NSW.

Newton et al [1962] reported one disease outbreak in Queensland due to *Streptococcus zooepidemicus* .

With the development of the intensive broiler industry, infection with *Salmonella spp* had become a serious problem. Simmons and Sutherland [1956] reported the ocurrence of *Salmonella spp* in chickens and ducks in Queensland from 1946-1948. They isolated numerous serotypes, with isolations of *S pullorum* decreasing and isolations of other serotypes increasing markedly. The serotyping was done by Miss N Atkinson at the University of Adelaide.

Jackson, Lindsay and Shiel [1971] described a study of the epizootiology and control of *Salmonella typhimurium* in a commercial poultry organisation. Bains [1974], in collaboration with Margaret McKenzie at Provincial Traders in Queensland, incriminated a commercial breeder flock as a source of *S typhimurium* infection in broiler chickens.

Working at the University of New England, Lloyd *et alia* [1974] showed that competetive exclusion - giving newly hatched chicks an oral dose of gut contents of hens - reduced the ability of *S typhimurium* both to colonise the gut and to produce septicaemia. In a later paper, Soerjadl *et alia* [1978] achieved the same results by dosing with *Streptococcus faecalis* .

Although there is no published record of the isolation of *Arizona spp* from poultry in Australia, Arizona infection was reported in 3 poultry flocks which had been slaughtered [Anon 1969]. There have been no reports of isolations since.

Vibronic hepatitis was reported from Western Australia by Gardiner [1964]. The disease, which is of minor importance, has been diagnosed in NSW on a number of occasions.

Erysipelas, caused by *Erysipelothrix rhusiopathiae* is a problem in some areas of turkey production. In an Australia-wide survey, Hart [1982] showed that the economic effect was minimal and vaccination gave effective control.

Moraxella anatipestifer is important in duck rearing areas of Australia. The organism was recovered from a black swan by Munday *et alia* [1970] and from commercial ducks in Queensland by Grimes and Rosenfeld [1972].

In 1978 and 1979, an acute respiratory disease of turkey poults was described in Europe and the USA. The causal organism was designated as a new species, *Bordetella avium* , by Kersters *et alia* [1984]. Blackall and Farrah [1985], working at the ARI, Yeerongpilly, isolated a similar organism from the respiratory tract of 3 chickens and a turkey. They identified the isolates as *B avium* and presented a table of tests for the differentiation of *B avium* , *B bronchiseptica* and *A faecalis* . Blackall and Doheny [1987] identified 13 isolates of *B avium* from turkeys showing swollen sinuses and from chickens showing no clinical signs or with ocular discharge or tracheitis.

It can be seen that a preponderance of bacteriological investigations of diseases of poultry have been concerned with diagnosis and epizootiology. Investigations have been carried out in government laboratories, integrated poultry organizations and universities. The outstanding achievement has been the eradication of pullorum disease from all commercial flocks in Australia.

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An abridged version of this paper will be published in the forthcoming book, The History of Microbiology in Australia, edited by Professor Frank Fenner, to be published as an endorsed bicentennial activity by The Australian Society for Microbiology

What's past is prologue

"Not only does the past illuminate the present, in a sense it is the present - for the present is not created daily with the sunrise, but is a distillation of the past. And that 'what's past is prologue' should come as no surprise, for whether by overt action of by default, we are shaping our tomorrow day by day, and in the accelerated pace of the present, what is today soon becomes another fact of history.....

"If our own history teaches us anything, it is that we should learn more of our history - that our heritage has significance not only to ourselves but to everyone. In particular, it is essential we appreciate that what we do not learn we are destined to repeat without realising it. Perhaps the principal lesson is that the veterinary profession is best served when it renders maximum service to an informed public. "

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COMING EVENTS

Animal Health and Production in the 21st Century
9-10 November 1989; Sydney
contact Ms Naava Soudak, CSIRO Animal Health, Private Bag No.1, Parkville, 3052. Tel [03] 342 9700

AVPA Scientific Meeting
14-15 November 1989; Melbourne
contact Roger Chubb, The University of New England, Armidale, NSW. Tel. [067] 733 333

Australian Society for Laboratory Animal Science Annual Conference & AGM [postponed]
29 November-1 December 1989, Brisbane
contact Dr I Harris, PO Box 125 Kenmore 4069

8th European Poultry Conference
June 1990; Barcelona, Spain
contact Greg Poole, PO Box 547, Tamworth 2340

11th Annual Conference of the Association of Avian Veterinarians
8-16 September 1990; Phoenix, Arizona USA
contact AAV Conference Office, 1625 So. Birch Street, Suite 106, Denver Colorado USA 80222. Fax 303 759 8861

20th International Ornithological Congress
2-9 December 1990; Christchurch, New Zealand
contact Dr BD Bell, Zoology Department, Victoria University of Wellington, Private Bag, Wellington, New Zealand

XIX World's Poultry Congress
20-24 September 1992; Amsterdam, The Netherlands